

## Claims

- [c1] A reactor servicing platform for a nuclear reactor, the nuclear reactor comprising a reactor pressure vessel positioned in a primary containment and at least one refuel bridge, the primary containment comprising a refueling floor, said servicing platform comprising:
- a frame;
  - a support structure;
  - a floor covering said frame, said floor comprising a reactor access opening sized to permit access to the reactor pressure vessel.
- [c2] A reactor servicing platform in accordance with Claim 1 further comprising at least one auxiliary platform extending into said access opening.
- [c3] A reactor servicing platform in accordance with Claim 2 wherein said at least one auxiliary platform is movable along a perimeter of said access opening of said floor.
- [c4] A reactor servicing platform in accordance with Claim 1 wherein said access opening has a circular, elliptical, or polygonal shape.
- [c5] A reactor servicing platform in accordance with Claim 1 further comprising a safety rail extending around a perimeter of said access opening.
- [c6] A reactor servicing platform in accordance with Claim 1 further comprising a safety rail extending around an outer perimeter of said floor.
- [c7] A reactor servicing platform in accordance with Claim 1 wherein said floor comprises at least one floor panel coupled to said platform frame.
- [c8] A reactor servicing platform in accordance with Claim 1 wherein said servicing platform comprises at least one of steel, aluminum, and a thermoplastic and fiber composite material.
- [c9] A reactor servicing platform in accordance with Claim 1 wherein said support structure is configured to suspend said servicing platform from two spaced apart refuel bridges.

- [c10] A reactor servicing platform in accordance with Claim 1 wherein said support structure comprises a plurality of wheels sized to engage a crane rail.
- [c11] A reactor servicing platform in accordance with Claim 1 wherein said support structure is configured to engage the refueling floor of the reactor.
- [c12] A reactor servicing platform in accordance with Claim 1 further comprising at least one lifting device movably coupled to said frame, said at least one lifting device movable along a perimeter of said access opening.
- [c13] A nuclear reactor comprising:  
a primary containment vessel;  
a reactor pressure vessel positioned in said primary containment vessel; and  
a reactor servicing platform comprising:  
a frame;  
a support structure;  
a floor covering said frame, said floor comprising a reactor access opening sized to permit access to said reactor pressure vessel.
- [c14] A nuclear reactor in accordance with Claim 13 wherein said servicing platform further comprises at least one auxiliary platform extending into said access opening.
- [c15] A nuclear reactor in accordance with Claim 13 wherein said at least one auxiliary platform is movable along a perimeter of said access opening of said floor.
- [c16] A nuclear reactor in accordance with Claim 13 wherein said servicing platform access opening has a circular, elliptical, or polygonal shape.
- [c17] A nuclear reactor in accordance with Claim 13 wherein said servicing platform floor comprises at least one floor panel coupled to said platform frame.
- [c18] A nuclear reactor in accordance with Claim 13 wherein said servicing platform comprises at least one of steel, aluminum, and a thermoplastic and fiber composite material.

[c19] A nuclear reactor in accordance with Claim 13 further comprising at least two refuel bridges spaced apart and positioned above said reactor pressure vessel, said servicing platform support structure engaging said refuel bridges to suspend said servicing platform from two spaced apart refuel bridges.

[c20] A nuclear reactor in accordance with Claim 13 wherein said primary containment comprises a refuel floor located above said pressure vessel, said refuel floor comprising a plurality of crane rails, said support structure comprising a plurality of wheels sized to engage said crane rails.

[c21] A nuclear reactor in accordance with Claim 13 wherein said primary containment comprises a refueling floor located above said pressure vessel, said servicing platform support structure engaging said refueling floor to support said servicing platform above said pressure vessel.

[c22] A nuclear reactor in accordance with Claim 21 wherein said refuel floor comprising a pressure vessel access opening and a ledge extending circumferentially around said pressure vessel access opening, said servicing platform support structure engaging said ledge to support said servicing platform above said pressure vessel.

[c23] A nuclear reactor in accordance with Claim 13 wherein said servicing platform further comprises at least one lifting device movably coupled to said frame, said at least one lifting device movable along a perimeter of said access opening.

[c24] A method of servicing a nuclear reactor during a reactor outage, the reactor comprising a primary containment vessel and a reactor pressure vessel positioned in the primary containment vessel, said method comprising: positioning a servicing platform above the reactor pressure vessel, the servicing platform comprising a frame, a support structure, and a floor attached to the frame, the floor comprising a reactor access opening sized to permit access to the reactor pressure vessel; and performing predetermined servicing operations on the reactor.

[c25] A method accordance with Claim 24 wherein the servicing platform further comprises at least one auxiliary platform extending into the access opening.

- [c26] A method in accordance with Claim 24 wherein the at least one auxiliary platform is movable along a perimeter of the access opening of said floor.
- [c27] A method in accordance with Claim 24 wherein the servicing platform access opening has a circular, elliptical, or polygonal shape.
- [c28] A method in accordance with Claim 24 wherein the servicing platform comprises at least one of steel, aluminum, and a thermoplastic and fiber composite material.
- [c29] A method in accordance with Claim 24 wherein the reactor comprises at least two refuel bridges spaced apart and located in the primary containment above the reactor pressure vessel, and positioning a servicing platform above the reactor pressure vessel comprises positioning the servicing platform with the servicing platform support structure engaging the refuel bridges to suspend the servicing platform from the two spaced apart refuel bridges.
- [c30] A method in accordance with Claim 24 wherein the primary containment comprises a refuel floor located above the pressure vessel, the refuel floor comprising a plurality of crane rails, the support structure comprising a plurality of wheels, and positioning a servicing platform above the reactor pressure vessel comprises positioning the servicing platform with the servicing platform support structure wheels engaging the crane rails.
- [c31] A method in accordance with Claim 24 wherein the primary containment comprises a refueling floor located above the pressure vessel, and positioning a servicing platform above the reactor pressure vessel comprises positioning the servicing platform with the servicing platform support structure engaging the refueling floor to support the servicing platform above the pressure vessel.
- [c32] A method in accordance with Claim 31 wherein the refuel floor comprises a pressure vessel access opening and a ledge extending circumferentially around the pressure vessel access opening, and positioning a servicing platform above the reactor pressure vessel comprises positioning the servicing platform with the servicing platform support structure engaging the ledge to support the servicing platform above the pressure vessel.

[c33]

A method in accordance with Claim 24 wherein the servicing platform further comprises at least one lifting device movably coupled to the frame, the at least one lifting device movable along a perimeter of the access opening.

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